In the claims:

1. **(Currently Amended)** A method of characterizing a first molecule X and a second immobilized molecule Y in a sample of a conducting medium, said method comprising:

   (a) providing a system comprising one or more passive detection elements, said immobilized second molecule Y, said conducting medium sample, and said first molecule X, wherein no voltage difference external to the medium is applied to said one or more passive detection elements, said immobilized second molecule Y is immobilized on a surface of a first working electrode and ~~wherein~~ said first working electrode is a passive detection element;

   (b) detecting a transient electrical signal, wherein the transient electrical signal gives rise to a decaying waveform and is ~~caused~~produced by a monodirectional movement of said first molecule X through said conducting medium sample relative to said immobilized second molecule Y and wherein said transient electrical signal is measured using said first working electrode; and

   (c) relating said detected transient electrical signal to at least one characterizing feature of said first molecule X and said second molecule Y in said sample.

2. **(Original)** The method according to Claim 1, wherein said at least one characterizing feature is motion, velocity, quantity, structure, charge or binding event.

3. **(Original)** The method according to Claim 1, wherein said movement is a movement of X toward Y.

4. **(Original)** The method according to Claim 1, wherein said movement is a movement of X away from Y.

5. **(Original)** The method according to Claim 1, wherein said conducting medium sample is a fluid medium.

6. **(Original)** The method according to Claim 1, wherein said conducting medium sample is a gel or gaseous medium.

7. **(Original)** The method according to Claim 1, wherein said immobilized molecule Y is a polymer.

8. **(Original)** The method according to Claim 7, wherein said polymer is a polypeptide.

9. **(Original)** The method according to Claim 7, wherein said polymer is a nucleic acid.

10. **(Cancelled)**

11. **(Previously Presented)** The method according to Claim 1, wherein said transient electrical signal is measured using said first working electrode and a second reference electrode.

12. **(Previously Presented)** The method according to Claim 1, wherein said transient electrical signal is measured using a plurality of electrodes, which plurality includes said first working electrode.

13. **(Original)** The method according to Claim 1, wherein said transient electrical signal is a change in an electrical parameter over time.

14. **(Original)** The method according to Claim 13, wherein said electrical parameter is voltage.

15. **(Original)** The method according to Claim 13, wherein said electrical parameter is current.

16. **(Original)**The method according to Claim 13, wherein said electrical parameter is accumulated charge.

17-112. **(Cancelled)**

113. **(Previously Presented)** A method according to Claim 1, wherein said second immobilized molecule Y is a polymer immobilized on the surface of the first working electrode, said conducting medium sample is fluid medium; said transient electrical signal is voltage that is measured using said first working electrode and a second reference electrode; said movement is a movement of X towards Y; and said at least one characterizing feature is a binding event between X and Y.

114. **(Previously Presented)** The method according to Claim 113, wherein said immobilized polymer is a polypeptide.

115. **(Previously Presented)** The method according to Claim 114, wherein said first molecule X is a polypeptide.

116. **(Previously Presented)** The method according to Claim 113, wherein X and Y are proteins.

117. **(Previously Presented)** The method according to Claim 116, wherein X and Y are receptor-ligand pair.

118. **(Previously Presented)** The method according to Claim 116, wherein X and Y are an antibody-antigen pair.

119. **(Previously Presented)** The method according to Claim 113, wherein said immobilized polymer is a nucleic acid.

120. **(Previously Presented)** The method according to Claim 119, wherein said first molecule X is a nucleic acid.

121. **(Previously Presented)** The method according to Claim 119, wherein said method is a method of detecting a nucleic acid analyte in a sample.

122. **(Previously Presented)** The method according to Claim 121, wherein said nucleic acid analyte comprises a SNP.

123. **(Previously Presented)** The method according to Claim 121, wherein said method quantitatively determines the amount of said nucleic acid analyte in said sample.

124. **(Previously Presented)** The method according to Claim 123, wherein said method is a method of gene expression profiling.

125. **(Currently Amended)** A method of detecting the occurrence of a binding event between a first molecule and an immobilized second molecule in a medium, said method comprising:

(a) providing a system comprising one or more passive detection elements, said immobilized second molecule immobilized on a surface of a working electrode and in contact with a medium comprising said first molecule, wherein no voltage difference external to the medium is applied to said one or more passive detection elements, and wherein said working electrode is a passive detection element;

(b) detecting a transient electrical voltage, wherein the transient electrical voltage gives rise to a decaying waveform and is ~~caused~~produced by a binding event between said first molecule and said immobilized second molecule and wherein said transient electrical voltage is measured using said first working electrode and a second reference electrode; and

(c) relating said detected transient electrical voltage to the occurrence of said binding event between said first and second molecule.

126. **(Previously Presented)** The method according to Claim 125, wherein said first and second molecules are proteins.

127. **(Previously Presented)** The method according to Claim 125, wherein said first and second molecules are a receptor-ligand pair.

128. **(Previously Presented)** The method according to Claim 125, wherein said first and second molecules are an antibody-antigen pair.

129. **(Previously Presented)** The method according to Claim 125, wherein said first and second molecules are nucleic acids.

130. **(Previously Presented)** The method of claim 1, wherein the transient electrical signal is voltage giving rise to a waveform that decays in 1 minute to 1 millisecond.

131. **(Previously Presented)** The method of claim 130, wherein the waveform decays in 5 seconds to 10 milliseconds.

132. **(Previously Presented)** The method of claim 125, wherein the transient electrical voltage gives rise to a waveform that decays in 1 minute to 1 millisecond.

133. **(Previously Presented)** The method of claim 132, wherein the waveform decays in 5 seconds to 10 milliseconds.

134. **(New)** The method of claim 11, further comprising a signal processor, wherein the signal processor compares responses from the working electrode and the reference electrode to generate said transient electrical signal.

135. **(New)** The method of claim 134, further comprising a differential amplifier.

136. **(New)** The method of claim 135, wherein the working electrode and reference electrode are present on a planar surface of a semiconductor substrate.

137. **(New)** The method of claim 1, wherein the working electrode is magnetized.

138. **(New)** The method of claim 137, wherein Y is immobilized on the surface of the first working electrode by paramagnetic beads.

139. **(New)** The method of claim 138, wherein said transient electrical signal is a change in voltage over time.

140. **(New)** The method of claim 138, wherein said transient electrical signal is a change in accumulated charge over time.